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2

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$$R^6C_6H_4(CH_2)nN^+(R^6)(R')$$

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**TITLE : PREPARATION OF PRECURSOR  
SOLUTION FOR FORMING THIN  
TITANIA FILM**

$$R^{\bullet}C_5H_4NH^+$$

**ABSTRACT :** PROBLEM TO BE SOLVED: To obtain a titanium-contg. soln. suitable for use in the formation of a thin titania film on a substrate by reacting a titanium alkoxide with an aminopolycarboxylic acid and an amine in a polar solvent and adding an oxidizer.

**SOLUTION:** A titanium alkoxide is reacted with an aminopolycarboxylic acid and an aliphatic amine having  $\leq 10C$  alkyl group in a polar solvent and an oxidizer is added to obtain the objective precursor soln. for forming a thin titania film contg. titanium complex ions with coordinated aminopolycarboxylic acid and dioxide ions and amine cations of one of formulae I-III (where  $R^1$  to  $R^4$  are H or a 1-10C alkyl, at least one of them is an alkyl,  $R^5$  and  $R^8$  are dimethylamino, diethylamino, H or a 1-16C alkyl, (n) is 0 or 1 and  $R^6$  and  $R^7$  are each H or a 1-10C alkyl). When the precursor soln. is mixed with silica sol, applied on a substrate of quartz glass, soda lime glass, etc., dried and fired at  $\geq 400^\circ C$ , a titania/silica composite film is obtd.

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